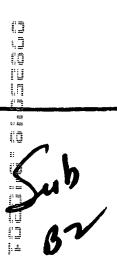
What is claimed is:

A gas plasma emission source comprising:
 a resonant cavity; and
 a solid state power source coupled to the resonant cavity.

- 2. The emission source of claim 1, further including a cable coupled between the solid state power source and the resonant cavity.
- 3. The emission source of claim 1, wherein the resonant cavity includes a tube disposed through the resonant cavity.
- 4. The emission source of claim 1, wherein:
 the solid state power source couples into the resonant cavity sufficient power
 to sustain a plasma in a gas disposed within the resonant cavity, the sufficient power being less
 than 300 watts;

the plasma constitutes a fluctuating load on the solid state power source; and the sufficient power is substantially stable with respect to the fluctuating load.

- 5. The emission source of claim 4, wherein the sufficient power is less than 100 watts.
- 6. The emission source of claim 1, wherein the solid state power source includes an oscillator coupled to a solid state power amplifier.
- 7. An atomic emission detector comprising the emission source of claim 1 and a spectrographic detector disposed to sense atomic emissions from a gas within the resonant cavity.
 - 8. The detector of claim 7 wherein:



the resonant cavity has a tube disposed along an axis;

the gas enters the tube from one end of the tube, another end of the tube being an open end; and

the spectrographic detector is disposed to sense atomic emissions emitted from the open end.

- 9. The detector of claim 7, further including a cable coupled between the solid state power source and the resonant cavity.
 - 10. The detector of claim 7, wherein:
 the resonant cavity includes a tube disposed through the resonant cavity; and
 the tube comprises one of a fused silica tube and a sapphire tube.
- 11. The detector of claim 7, wherein:
 the solid state power source is coupled to the resonant cavity to provide
 sufficient power to sustain a plasma in the gas within the tube, the sufficient power being less
 than 300 watts;

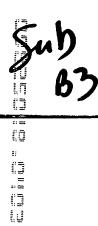
the plasma constitutes a fluctuating load on the solid state power source; and the sufficient power is substantially stable with respect to the fluctuating load.

- 12. The detector of claim 11, wherein the sufficient power is less than 100 watts.
- 13. The detector of claim 7, wherein the solid state power source includes an oscillator coupled to a solid state power amplifier.
- 14. A method of sustaining a plasma comprising steps of:

 passing a gas through a resonant cavity; and

 exciting the resonant cavity with signal power from a solid state power source
 to sustain the plasma in the gas.

- 15. The method of claim 14, wherein the step of exciting includes exciting the resonant cavity with signal power that is less than 300 watts.
- 16. The method of claim 14, further comprising a step of sensing a wavelength of radiation emitted from the plasma.
- 17. The method of claim 14, further comprising a step of sensing an intensity of radiation emitted from the plasma.



- 18. A method of using a solid state power source, comprising steps of:

 passing a gas through a resonant cavity; and

 coupling sufficient signal power from an output of the solid state power source
 to sustain a plasma in the gas, the sufficient power being less than 300 watts.
- 19. The method of claim 18, further comprising a step of sensing a wavelength of radiation emitted from the plasma.
- 20. The method of claim 18, further comprising a step of sensing an intensity of radiation emitted from the plasma.